Spring 1970
Volume 3, Number 2

ROTUNDA the bulletin of The Royal Ontario Museum

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The Cover:

A second millennium mystery—bronze arrowhead embedded in three human vertebrae (see page 7)

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Spotlight with the Editor

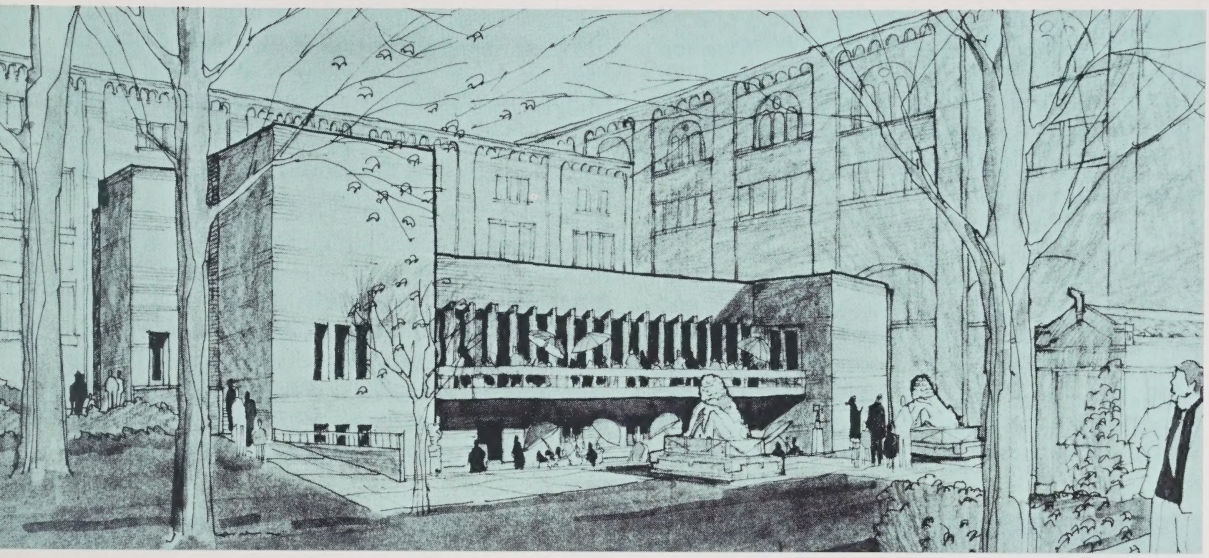
Past, present and future at the ROM

KINICH AHAU RETURNS TO BELIZE

ROM Director Peter Swann went to British Honduras in late February to return to the government a national treasure, the carved jade head of a Maya sun god, Kinich Ahau. The head was discovered in 1968 by Dr. David Pendergast who directs the ROM archaeological expedition which since 1963 has been excavating at Altun Ha, 30 miles north of Belize, capital of British Honduras. The 1,300-year-old head of the sun god is almost ten inches high and weighs 9¾ pounds, four pounds more than the largest previously known Maya carved jade object. Dr. Pendergast discovered the head in a tomb at Altun Ha and reported on the find in an earlier article (ROTUNDA 1968 Vol. 1, No. 4). Since it was found, the treasure has been at the Museum in Toronto for study. Now it is back in its country of origin. Meanwhile, in this issue, Dr. Pendergast reports on another aspect of work at Altun Ha, *Jigsaw in Jade.*

The jade head. Sun god Kinich Ahau returns to British Honduras

Sketch of new restaurant complex. Dinoburgers for the kids?



CHINTZ AND THE ROYAL MISTRESS

Did you know that Madame de Pompadour, the famous 18th century French beauty, once decorated an entire room at her country home with chintz? That historical footnote popped up during research for the *Origins of Chintz* exhibition, continuing at the ROM until May 28. This is the first major exhibition of Indian Chintz in North America. Organized by the ROM, the show also will be presented in New York City at the Cooper Hewitt Museum of Design June 26-Aug. 6.

FILM LIBRARY AND ARCHIVES

Among the latest ROM long-range projects is a Film Library and Archives. Its purpose is to restore and maintain early, rare film footage of Museum activities; make record films of field expeditions and major exhibitions; collaborate with outside film and television producers to make programmes for television use; and build a collection of films related to the Museum that are not available from other sources. To put the project on its financial feet, Museum Members and others were invited to become Founders of the Film Library. A total of 217 responded with contributions of $40 each. For the Founders, the ROM scheduled a seven-week programme of the film series, *Civilisation,* written and narrated by renown art critic Kenneth Clark. The 13 hour-long films were produced in colour by the BBC, presented originally on British TV to rave notices, and are scheduled to be shown on Canadian TV by the CBC, beginning in May. Watch for Lord Clark's vision of *Civilisation* and do try to see it in colour.

NEW ROM RESTAURANT

A new restaurant complex is scheduled to open at the ROM in the Fall of 1970. It will replace the small, dingy cafeteria, seating less than 80, which has attempted to serve hundreds of thousands of visitors over the years. The complex will contain a children's cafeteria for 250, a separate adult cafeteria, a Members' Lounge,

Kenneth Clark. His Civilisation *films help develop* ROM *Film Library and Archives*

and a small dining room. A fun decor is planned for the children's cafeteria—perhaps it will be a dinosaur den serving dinoburgers. That splendid gentleman, R. S. McLaughlin, who gave the Museum the McLaughlin Planetarium, has helped make the much needed restaurant complex possible by matching the Ontario government grant of $175,000 with a similar amount.

NEW BOOK AND GIFT SHOP

Already operating is the ROM's new Book and Gift Shop. Its only similarity to the old Sales Desk is its location. Glass doors, carpets on the floor, and handsome wood panel shelves and display racks make the new shop a *must* stop for visitors. It carries books published by the ROM, as well as other important titles, replicas of Museum objects, ROM posters and other unusual gifts, both Canadian and from other lands. Prices are modest and there are many items for children as well as adults. The new shop is one of the many projects of the Museum Design Department, headed by John Anthony.

ADMISSIONS TO AID PURCHASE FUNDS

Prices on the international art market are skyrocketing. And the available supply of good historical art objects rapidly is disappearing. What does a major museum, such as the ROM, do? It must fill the gaps in its collections. That takes money, lots of money. Where does it come from? The ROM does set aside a certain amount each year from its operating budget for pur-

New Book and Gift Shop. Replicas, books and other goodies for sale

Hard at work. Palaeontologist in Vertebrate Palaeontology diorama

chases. Private individuals and groups do contribute toward certain purchases. Director Peter Swann has organized a purchase trust which is growing. But, much more is needed. So adult visitors to the Museum now are being asked to pay a 50¢ admission, rather than the previous 25¢. The extra 25¢ will be used only for purchases for the collections. In a year this should amount to about $63,000. Of course admission continues to be free for children, students and ROM Members.

Meanwhile, student admission to public shows at the McLaughlin Planetarium has been raised to $1.00, the same as that charged adults. For the special school shows, admission continues at 25¢ per student. The small extra income will help ease the operating loss of the Planetarium.

MAN AT WORK

Visitors to the newly completed introductory section of the Vertebrate Palaeontology gallery are aware that in nearby areas construction is in progress. So when they round a curve in the new section they are disconcerted but not really surprised to see a man working against a rocky background. Frequently visitors quickly pass on, unwilling to disturb the intent worker. Only later do they realize their mistake. The figure is a mannikin and he is part of a diorama representing a palaeontologist at work. The diorama reproduces a quarry on a ranch near Eastend, Saskatchewan, where for several summers ROM workers have discovered fossil bones of brontotheres, entelodonts and other ancient animals. So far the industrious palaeontologist hasn't been named.

The skeleton on the courtyard floor in Operation AA9 with a bronze arrow head embedded in its spine

The three vertebrae from the body removed with the bronze arrow head still in place

Second millennium surprises

T. Cuyler Young, Jr.
Curator, West Asian Department

Bill Sumner, who was supervising the excavations in Operation AA9, called me over to have a look at what he had just found. "So what should we do with him?" he asked. "The last thing we need now is a—burial."

I stood looking down at a bone or two showing just below the surface of the ground. Sure enough, they were human. We had a burial on our hands.

A small bronze figurine of a bird: one of the finer pieces found this past summer in a Period III *or second millennium* B.C. *context*

A typical burial at Godin Tepe dating to Period III *and the second millennium* B.C.

"It doesn't look as though he has anything with him, does it?"

Bill grunted. Without anything more said, I turned away and left the discoverer to get on with the job.

Much as you do not want them at times, for they get in the way of what you are trying to prove at the moment, burials still have to be dealt with. They all have to be excavated, brushed clean, photographed, drawn and recorded with the same tender care that Schliemann would have used if he had found Agamemnon himself. It would be wonderful if the archaeologist could program the kind of data he gets to be the kind of data he wants, but that is often not the way it works. And a burial, any burial—even one totally lacking in grave goods—is loaded with data. There is no excuse for poor excavation. So, there was nothing for it but to do a good job.

That afternoon Bill's wife, Frances—burial clearer extraordinary— came out to the mound to help. She spent the afternoon on her hands and knees. (You've heard of housewife's knees? Well, you ought to see a pair of archaeologist's knees!) Carefully she brushed the soil away from each bone of that burial in AA9. We had been right, this body had been buried with no grave goods at all; not a single pot, no joint of meat, not even a miserable stone bead bracelet for the deceased to carry into the next world. In fact, this was not even a burial at all. The skeleton lay right next to the edge of the excavation, and no evidence showed in the section which might suggest a grave cut. What is more important, the body lay on its back with the arms and hands flung in a disordered fashion across its chest. The knees had originally been drawn up into the air, but had later been cut off by some people in the 7th century B.C. who had levelled off this area of the mound to prepare a house floor.

Now this is not the characteristic position of second millennium B.C. burials at Godin Tepe. Usually they are lying on their side, hands in front of the face, with the knees drawn up to the chest (page 8). The usual explanation is that this is an attempt to recreate the position of a human fetus, since it might be a good idea to go into the next world in the same position from which you entered this one. Yet our body had to be a second millennium burial. After all, it was lying on a second millennium B.C. courtyard floor. And that in itself was further evidence that we were not dealing with a burial. Buried bodies do not usually end up flat on floors of courtyards. In short, here was something of a mystery.

More quietly this time Bill suggested that I might come down and have another look at what we had found. He had a kind of gentle smile on his face, suggesting that there was something of a surprise awaiting me at the end of our short walk. Then, once again I was looking down at our burial, now laid bare in full detail by a competent hand. Instead of a couple of bones, I saw what was and is, for me, the most exciting archaeological find I have ever been associated with. Not only did we know that this was not a burial at all, we knew why it was not a burial. And we knew why the man had died. (He was, by the way, a young adult male — in all probability.)

There, sticking out from his spinal column was the green tip of a corroded bronze arrow head (page 6). The drama was even clearer when we had taken the skeleton apart, carefully preserving the bones and particularly the three vertebrae involved with the wound (page 7). Around four thousand years ago this man had been shot in the back with an arrow falling in a descending arc. He had dropped on the courtyard floor, perhaps right where he was shot, and had slowly died (the wound, I am told by those who should know, would not have been instantly fatal). There he had been left. Eventually he was covered over with eroded debris and wash from collapsing mudbrick buildings. And there he was found eventually by a couple of rather cynical archaeologists who at first considered him just a boring burial with no grave goods that got in the way of what they really wanted to do in that operation. At Godin Tepe in western Iran, where the University of Toronto and the Royal Ontario Museum have been excavating since 1965 (ROTUNDA Vol. 1 No. 2 and Vol. 3 No. 1) the second millennium is full of surprises.

Readers of the last issue of ROTUNDA are well informed about the remarkable discoveries the Museum's excavations at Godin Tepe have made in the level dating to the 7th century B.C. Yet they are only part of the expedition's story. The mound at Godin was more or less continuously occupied from about 5,500 B.C. to the 6th century B.C. and our research programme is also designed to throw light on the earlier periods at the site. This we hope to do mainly through excavations in the so-called "Deep Sounding." Here we have gone below the fortification wall and manor house of Period II over an area of some 700 square metres. By the end of the 1969 season we were about 6.5 metres below the original surface of the mound, deep in the Period III remains and in time back to about 1700 or 1800 B.C.

These Period III deposits in the Deep Sounding have revealed a series of superimposed architectural levels, the remains of village houses and workshops. The lowest level so far cleared was, like our skeleton with the arrow in its back, something of a surprise. Level III:4 was a veritable rabbit warren of rooms and small streets or alleys. Running at an angle across the southeast corner of the area under excavation was a main street—which we promptly labelled "Avenue Road"—fronted on both sides by houses built on fairly massive stone foundations. One house, on the north side of the street, was flanked on both sides by short alleyways which were paved with flat slabs of stone and which ended in a flight of three steps (below). The alley to the right led into another house; that on the left gave access to a small square onto which two other houses had doors. The house flanked by the two alleys, however, was the most interesting feature in this area. It consisted of three rooms and a courtyard, the latter reached from the front room by another flight of three stone-paved steps. The centre room of the three had been violently destroyed in a great fire. The mud-brick walls were burned a bright red, and the collapsed burned debris was piled high on all sides, testimony to the suddenness and completeness of the destruction. Whether this burn-

The burned house in Operation A2 flanked on both sides by stone-paved alley ways which lead up steps to the north

A large double oven from Operation C2, Level III:4

ing was the result of special activities that may have been conducted in this room involving a fire which simply got out of hand, causing localized destruction, or is evidence of a larger destruction affecting this entire building level, is an intriguing question.

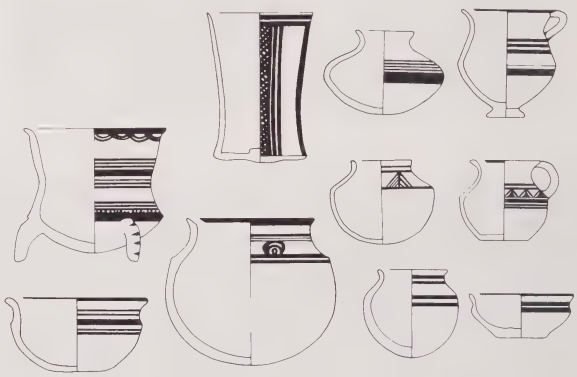
There is some evidence elsewhere in Level III:4 for a violent destruction. For one thing, many of the walls are preserved to a remarkable height. Usually the archaeologist is fortunate if he finds a few courses of bricks standing on a building's stone foundation. In Level III:4 we found some walls preserved to a height of almost two metres. This suggests a rather sudden in-filling of the rooms—the kind of stratigraphic conditions one could associate with a violent destruction. More dramatic evidence comes from one of the rooms in Operation B2, just to the west of the burned room. Here was another body, another surprise and another mystery.

Clearly the roof and the upper walls of this room had collapsed suddenly, trapping and crushing the person whose skeleton we found flung out on the stone paved floor (page 12).

A view of the sherd yard at the expedition's headquarters where the 200,000 sherds found this past season were washed, sorted, labelled and processed for shipment

The skeleton of a person with one leg missing crushed by the collapsing debris of a room in Operation B2

Typical Period III *or second millennium* B.C. *pottery from Godin Tepe*



Also smashed in the falling debris were numerous pottery vessels of typical Period III type which were in use in the room at the time of its destruction (above). Here our skeleton is flat on his face, pressed against the floor by the weight of the collapse. It is clear enough how he died. What is not clear is what happened to his left leg and the left side of his pelvis or hip bone. Certainly he had not been a one legged man. Was it jackals snooting around in the destruction debris who found part of a leg sticking out of the rubble, tore hungrily at the meat, and, because the body was already slightly decayed, pulled off the whole leg with part of the hip? Not a very pleasant reconstruction, but possible and perhaps the best we can do with the evidence.

Still further west in this complex of buildings, in Operation C2, we found more evidence that some of these structures were not just simple peasant village houses. Here, against one massive wall, was a large double oven on a slightly raised platform of mud-brick (page 11). Such an oven would seem too large for baking just one family's bread. For one thing, it is about five times the size of the largest private bread oven I know of in the modern village of Godin. For another, it is much more massive and elaborate than standard house hearths and ovens we have excavated from other rooms and other

levels dating to Period III at Godin Tepe. The standard cooking oven of the period is actually nothing more than a simple open hearth, usually associated with round thin-walled storage bins made of mud mixed with straw and air-dried. (A pair of such bins, well preserved, with openings at the bottom through which the grain stored inside was extracted, were found this season in Operation C2, Level III:2 (below)). One is tempted to suggest that this more massive oven was used for some industrial or manufacturing purpose. Or perhaps it was an oven used to bake bread for half the village. The eventual study of the pottery and small finds from this area may give us a clue to this, another of the mysteries of Period III at Godin.

Strangely large ovens, crushed and dismembered bodies, burned rooms and a young man shot in the back. Lest the reader be left with a false impression that archaeology in general, and the excavation at Godin Tepe in particular, is nothing but romantic surprises encrusted with mystery, it might be well to recall that an author's memory tends to dwell on the high points of a field season just passed. In the end, however, the really exciting results of such research come from the painstaking and detailed analysis and study of the more than 200,000 broken pot sherds we processed through the sherd yard this summer (page 11), of the numerous small finds that we carefully extracted from their stratigraphic context — some of high esthetic value, others more prosaic (page 8)— and of the masses of non-artifactual material (charred grains, nine shipping crates of animal bones, soil samples and so forth) which will tell us much about ancient diets and economic systems. That this material is now out of the ground and available for study is the result of hundreds of hard, slugging hours of work by the fine international staff that we were fortunate to have at Godin Tepe in 1969, and is all made possible by the kindness of the Imperial Government of Iran which not only permits these excavations but indirectly and directly participates in them. But a bit of romantic mystery and the occasional surprise boosts the morale of all when the sun gets a little extra hot.

The remains of two grain storage bins made of straw tempered mud in a kitchen room of a house from Operation C2, Level III:2

T. Cuyler Young, Jr., is Curator of the ROM's West Asian Department and Director of the ROM's field work in Iran. He hopes to return to Godin Tepe, and to more archaeological surprises, in 1971.

Cracking seen in the Kane painting, "Sioux Scalp Dance"

"Sioux Scalp Dance" by Paul Kane, half cleaned

Conserving the Kane Collection

Elizabeth Phillimore

Conservator

In 1846 Paul Kane was on his way west, fulfilling his dream to cross Canada to the Pacific, sketching the vanishing life of the Indians. He travelled in the Hudson's Bay Company spring brigade of canoes—28-foot birchbark giants manned by eight voyageurs which carried trade goods west. They crossed the Great Lakes, through the Rainy River system and Lake of the Woods to Lake Winnipeg and on to the Pacific.

The sketches, done under incredible conditions, were used by Kane on his return to Toronto as a guide for a number of oil paintings. His

Author applies mulberry facing tissue to protect paint surface during treatment

patron George William Allen sponsored 100 of these, and it is this collection which eventually came to the ROM.

Many of these paintings have not been altered in the 120 years or so since Paul Kane himself tacked canvas to stretcher and began to paint. However, time and exposure cause chemical and physical changes in the delicate materials of which a painting is made. To alleviate this deterioration the ROM, with the generous help of the Canada Council, has begun a massive conservation program on the Paul Kane paintings.

During the late 19th century, maintaining an even temperature in buildings was not possible. A valued portrait or landscape hung in a place of honour over the fireplace, perhaps in a parlour or rarely used room. On festive occasions or Sundays when the room was inhabited, the fire was lit and within two hours the room temperature might rise from a chilling 20 degrees to 60 or 70 degrees, the chimney wall even more. The painting struggles to adjust, but the strain tells, and after many such repeated demands, it loses its capacity to do so, and serious damage results. Many early paintings have spent a generation or two in an attic or barn, unloved by owners, who yet cannot bring themselves to dispose of an heirloom.

The anatomy of a painting, like that of a person, influences its ability to survive. The seasoned wood panels prevalent in Europe during the 14th and 15th centuries were painted in the almost imperishable egg-tempera medium, and often glaze-coated with "glair," the liquid drained from beaten egg whites. With the arrival of the Renaissance, and much larger works, linen cloth, "canvas," became popular and almost simultaneously oil as a painting medium came into general use. Oil rots linen. A means had to be found to isolate the oil from the linen, and so the structure of canvas paintings was evolved, and has remained basically unchanged until the introduction of plastic media in our time.

This anatomy from the "bones" out, so to speak, is:

1) the stretcher: four pieces of wood forming a rectangle
2) the canvas: stretched horizontally over the stretcher and tacked to all four sides of its vertical edge
3) the size: several coats of warm skin glue in water, which coats the linen fibres and gives them tautness
4) the ground: a white sealer-coat, usually lead or zinc oxide ground into oil
5) the picture: the artist's paint layers
6) the varnish: a clear resin coating, applied originally to heighten the colour by a per-

Removing old lining canvas from back of painting

Waxing newly stretched lining linen on the hot table

manent wetting effect, and to give a uniform shine to the surface. Time has also proven it protects the paint from deterioration and discolouration.

By the mid-19th century in Canada, an artist rarely carried out all these technical steps. He bought his canvas pre-sized, pre-grounded and often pre-stretched.

The disfigurement of a painting can be the result of many different kinds of abuse which cause stresses to be set up within the delicately stratified structure. Because of physical and chemical changes, the layers become incapable of functioning together as a mass. Each has its own problems of expansion and contraction, all of which are accelerated by natural aging and stress. Gradually this causes a deterioration in their relationship to each other, which becomes visible to us in familiar ways:

Cracking: Visible in "spider web" form caused by a sharp physical blow to the canvas; or

When the hot table cools, it is opened and the heat-resistant Mylar is removed from the face of the painting

seen in meandering whorls, possibly the result of a fault in the composition or application of the ground coat.

Flaking: Dampness causing a swelling of the size and a consequent failure of the bond between it and the ground.

Powdering: Poor painting technique using insufficient oil to bond paint to ground.

Buckling: Radical distortion of the picture plane caused by alternate shrinkage and expansion over a period of years of neglect in cold/hot attics or barns.

A conservator's responsibility to a work of art involves the trick of restoring its physical well-being, but at the same time preserving its historical and aesthetic integrity, relatively undefiled by additions or alterations, thus prolonging the life of the artist's original concept. Paul Kane's oil paintings are fairly elementary in construction, simplifying their treatment.

The canvas is a loosely woven pre-grounded linen, the paint is thinly applied oil, and overall there is a single layer of spirit varnish. Generally, the paint layer is sound, as he used sufficient oil throughout to firmly bond the pigment particles together into a continuous paint film.

The canvas and size layers have fared less well. The fabric has perished to the point that a thread rolls to dust in one's fingers. The varnish has become brown and occasionally there are punctures. These conditions necessitate cleaning and lining the painting by adhering a new piece of linen canvas to the prepared back of the existing canvas.

The painting is first removed carefully from its frame. The back and stretcher are vacuumed and record photographs taken of any information on either. Sometimes the canvas is stencilled with a manufacturer's mark which may help in dating, and occasionally the artist has made a note or signed the stretcher, or a previous restorer has recorded a former treatment and its date. The face of the painting is also photographed with details of the signature, if any, abrasions, flaking, or severe buckling. I like to fill punctures at this point. A small area is cleaned around the hole, which is then filled with warm gesso. If the picture is large, excessively brittle or has any loose surface flaking, it is "faced" with strong Japanese mulberry tissue pasted to the front with thinned wax/resin adhesive. This is brushed on the outside of the tissue and readily soaks through, thereby eliminating the danger of dragging a brush over loose paint. When dry the painting is taken off its stretcher, care being taken not to break the edges, laid face down and work commences on the back.

Kane's painting, "Sioux Scalp Dance," had been glue-lined very poorly in 1934, and this old lining must be removed strip by strip. The back is then lightly sanded to level any knots and vacuumed clean. The painting is placed face down on a "hot table" on several layers of transparent heat-resistant Mylar and the table heated to 140°F. Due to lack of space, our table is a small home-made one, consisting of a flat wooden top, an electrically heated rubber blanket, then a ¼″ aluminium plate to distri-

Two views of "Half Breeds Travelling" by Paul Kane, taken first in raking light to show flaking paint, and then in ordinary light to show picture detail

bute the heat evenly. A cake of wax/resin adhesive is gently moved over the back of the painting, which as it melts, soaks completely through the old linen canvas, through the thirsty ground and into the fine cracks and lesions of the paint.

While this is cooling, the lining canvas is prepared. A piece of new unbleached linen is three times washed, dried, and stretched tight and square on a frame. This is placed on the hot table and waxed, cooled, and set aside.

The Mylar is now carefully peeled off the face of the painting, and facing tissue and excess surface wax removed with a wax solvent. Now the old discoloured varnish can be removed. This is perhaps the most hazardous and time-consuming act a skilled restorer performs. A mixture of organic solvents must be chosen which will dissolve this particular varnish without softening or abrading the delicate paint surface. Many crimes have been committed by unskilled or amateur restorers who did not

examine the nature of a particular artist's technique, or were not aware of the chemistry and behaviour of oil paint, and the widely varied action of solvents.

There is also the fact that people tend to think of as "right" those things which they have come to condone—like darkened paintings. At the outbreak of World War II the National Gallery in London removed its treasures to underground safety vaults in Wales. During their six year absence from public view, the National Gallery Conservation Staff had an opportunity to clean much old dark 19th century "gallery varnish" from a number of these as part of a total conservation program. In 1945 when the paintings were again put on view alongside others not yet cleaned, their brilliance caused much public alarm and the great controversy "to clean or not to clean" began.

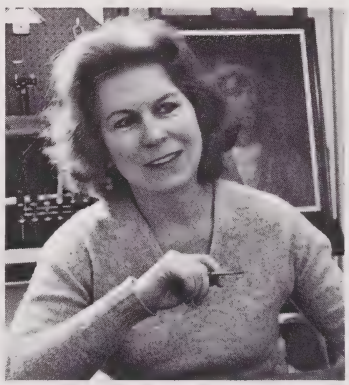
Letters to the *Times,* articles in the *Burlington Magazine,* both for and against went on for several months. The National Gallery Report for that year reiterated their belief in the fact that it was not the intention of say, El Greco, to have his brilliant colours and delicate tonal balances seen through a film of dark 19th century varnish. One has only to pick up any art book with good colour reproductions to see how right they were. One is instantly struck by the freshness of those paintings belonging to museums who clean, and the dull sombreness of those belonging to museums who apparently still do not.

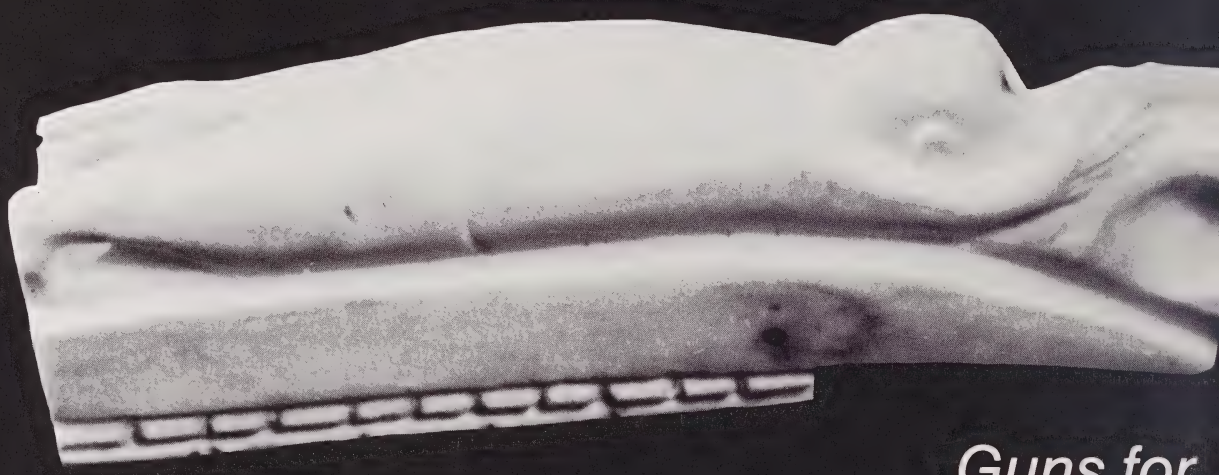
Once the varnish has been removed from the paint surface, the picture is ready for lining. The new, waxed, lining canvas is cut out of its frame and placed on the Mylar-covered hot-table. The painting is centred on the canvas face up, and covered with more Mylar to protect it. The table has been built with two air ports which lead to a vacuum pump. Strips of porous webbing are laid from these along the skirt of the canvas to act as an air passage. A thin rubber sheet is placed over all, the table heated and the vacuum pump turned on. The heat melts the waxed surfaces together and the vacuum pump withdraws all air, forming a close total bond. When the table and wax have cooled, the vacuum is released. The painting is flat and lined.

Now the excess wax is removed from the paint face, and any small gesso-filled areas are painted in to match the surrounding original, with dry artists' pigments in a plastic medium. The picture is then tacked on to a new modern adjustable stretcher, sprayed with several coats of synthetic non-yellowing protective varnish, and returned to its frame.

This basic treatment, with variations, is now standard is great museums from Leningrad to Munich and Los Angeles to Toronto. It can prolong the life and integrity of an artist's work almost indefinitely.

Elizabeth Phillimore, an honour student at the Ontario College of Art, later attended the Anglo-French Art School in St. John's Wood, London. Mrs. Phillimore joined the ROM Conservation Department in 1958, and has been Conservator since 1963. A member of the International Institute for the Conservation of Historic and Artistic Works, she received a Canada Council grant to attend the British Museum Summer Course for Conservation in 1963. Three years ago she began in earnest to paint again, in a studio in the Toronto home she shares with her two daughters.

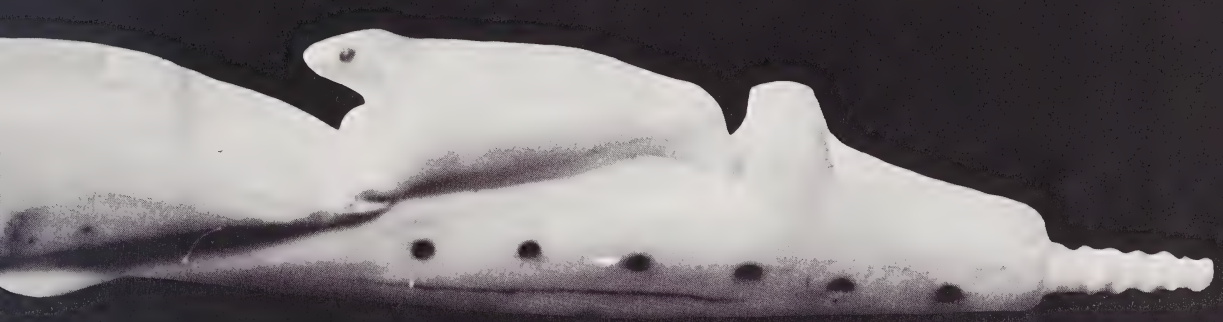




Guns for the Eskimos

J. Garth Taylor
Assistant Curator
Ethnology Department

Eskimo ivory carving of man shooting a seal. Eastern Arctic



It is almost 200 years since Eskimos of the Canadian Arctic first had the opportunity to use guns. One of the first Europeans to trust them with the weapons was Captain George Cartwright. He operated fishing and trapping stations in southern Labrador, just north of the Strait of Belle Isle, from 1770 to 1786.

Cartwright induced a family of Eskimos to spend the winter of 1770 in his neighbourhood, and he boasted of his success in maintaining peaceful relations with them. Although there had been earlier sporadic trade contacts between European fishermen and Eskimos, misunderstandings had often resulted in bloodshed between the two groups.

In his famous *Labrador Journal*, Cartwright relates how he handed his gun to an Eskimo companion after he himself had failed to kill a loon.

"Shuglawina then fired and killed it. It was really surprising, that he should kill a bird with a single ball, the first shot which he ever fired in his life, at a distance of a hundred yards at the least."

Apparently Cartwright was not the only person who was impressed by this performance. In the years which followed the Eskimos showed an ever-increasing desire to obtain guns of their own.

In their early efforts to obtain guns the Eskimos turned to the Moravian missionaries who established Labrador missions at Nain, Okak and Hopedale in 1771, 1775 and 1782. They pleaded with the missionaries to lend them guns for hunting caribou, saying that Captain Cartwright had done so when they visited him. The missionaries felt that it was "mischievous, dangerous and unadvisable" to teach the natives to use firearms and refused to give in to such requests for several years.

The first good supply of guns came from York Fort, a military post which was established to protect British fisheries in the Strait of Belle Isle. When a group of Eskimos from the Hopedale area returned from a visit to York Fort in 1782 the missionaries noted that "they had each gotten a gun, shot and powder." The Eskimos who had been at the fort bragged of the friendly manner in which they had been received. They said that the Commanding Officer wished to see more Eskimos and would supply them with guns "to fight with the English against the French and Americans."

Word spread rapidly and in the following summers hundreds of Eskimos made trips to the south. Prior to their departure they talked constantly about "the guns they hope to get in the south, and how they will use them to shoot deer, hare and birds." Many were successful and by 1787 the Hopedale missionaries reported that there was not a single Eskimo without a gun.

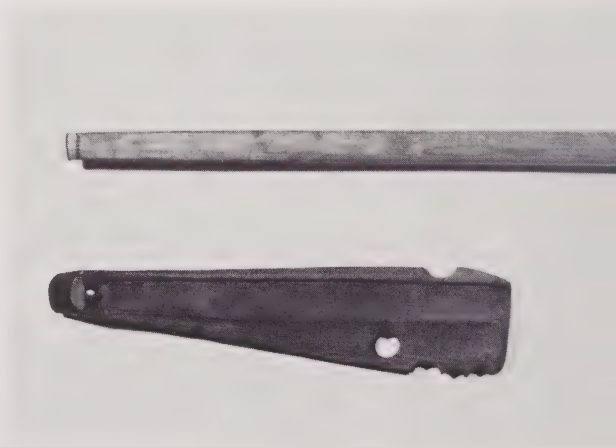
Some of the Eskimos acted as "middlemen," buying guns and ammunition in southern Labrador and trading them for baleen and other valuable commodities to the groups who lived further to the north. In this way guns spread along the entire Labrador coast and even into northern Ungava. When the missionaries Kmoch and Kohlmeister explored Ungava Bay in 1811 they were "saluted by the firing of muskets" in many of the settlements they visited.

The Eskimos further to the north and west received guns when Arctic whalers began to winter in their area. The whalers employed local natives to help them and many of the Eskimos were given firearms in exchange for their services. Whalers started to winter in southern Baffin Island around 1840 and twenty years later expanded to the west coast of Hudson Bay.

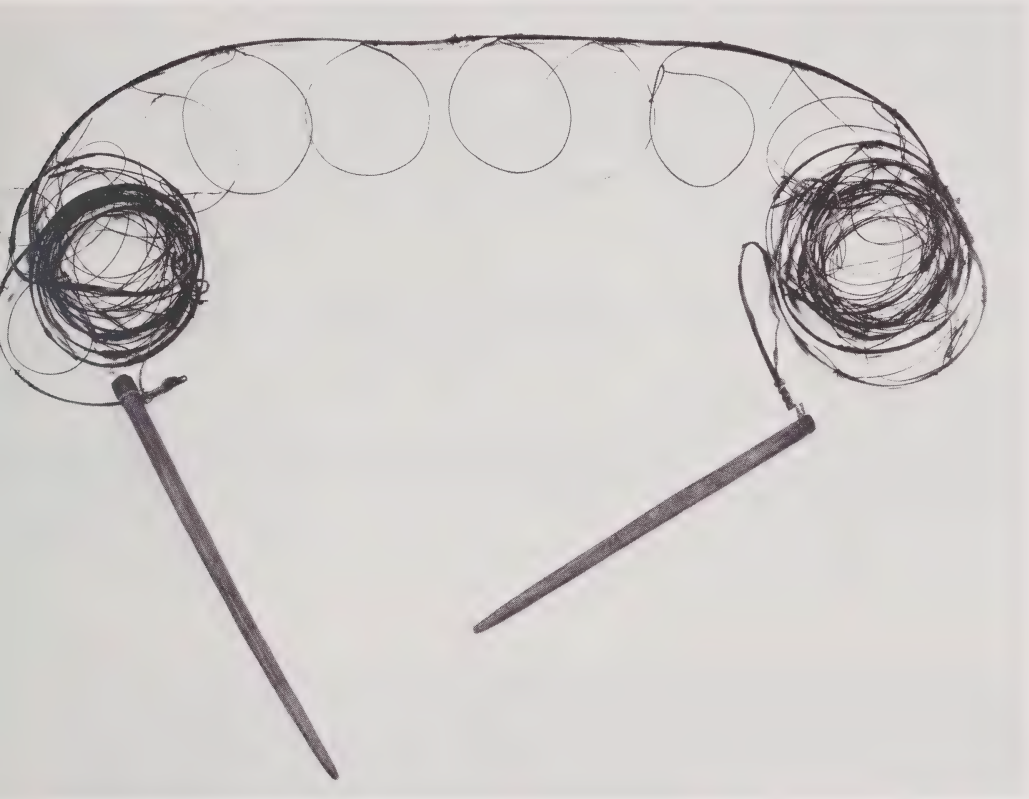
One of the first Eskimos to receive guns from the whalers was Eenoolooapik, a native of Baffin Island. Eenoolooapik was taken to Scotland on the whaler *Neptune* in 1839 and spent the winter in Aberdeen. He returned to his home the following year with many presents among which were "fowling-pieces, with powder and shot." His cousins viewed the guns "with much surprise" and requested a demonstration of their power. Like Cartwright's Labrador companions they were lucky with their first shot.

"A mark was accordingly hung in a convenient situation, and, after seeing Eenoo fire, one of them was persuaded to try it himself. He was a little timid at first, but at length he took the piece and fired. He seemed vastly pleased when he saw that he had hit the mark."

The last Eskimos to get guns were those in the central Arctic between the Mackenzie River and Hudson Bay. Except for the western groups, who obtained guns from Alaska and



Baleen snare used to catch diving birds. The baleen line is approximately 20 feet long and has 60 small nooses in which the birds are snared. Northern Ungava



Bird spear and thrower. Baffin Island

from the Hudson's Bay Company post at Fort McPherson, most of these people remained unarmed until the present century. However, with the expansion of the fur trade more posts were established and by 1920 even the isolated Netsilik were fully equipped with rifles. The slow spread of firearms throughout the Arctic was complete.

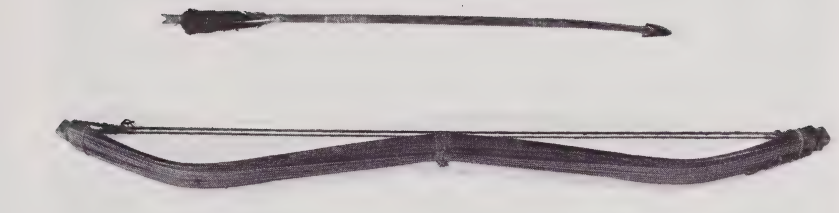
The acquisition of firearms increased the Eskimos' dependence on the outside world. In remote areas long journeys became necessary in order to obtain ammunition which required constant replenishment. Some groups made permanent migrations in order to be closer to trading centres.

In the days of muzzle-loaders some Eskimos made their own musket balls in bullet moulds which they carved from stone. Simple moulds consisted of two flat stones carved to shape and held together by wooden pegs. More elaborate ones were made by inserting the stone moulds into wooden handles which opened on a leather hinge. When muskets were replaced by breech-loading rifles, many Eskimos loaded their own cartridges with crude instruments fashioned from bone and ivory.

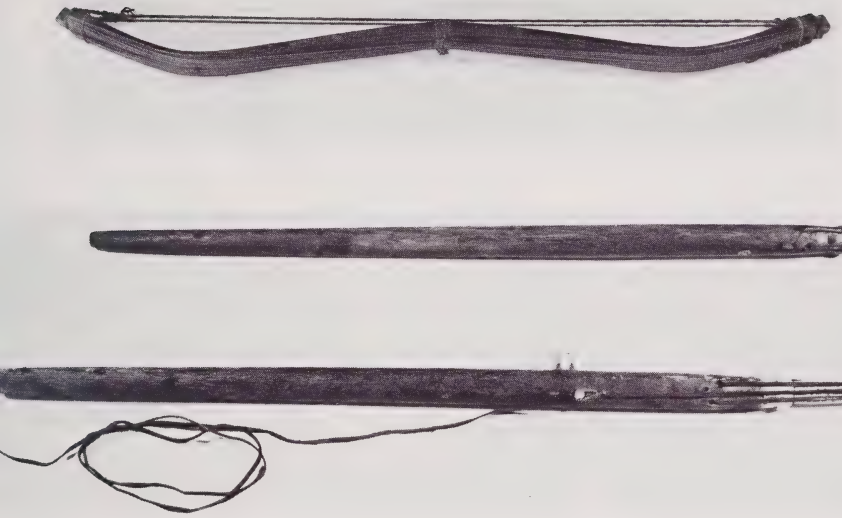
As guns and ammunition became available to them, the Eskimos began to abandon their traditional weapons, some immediately, others gradually.

Among the first traditional weapons to be replaced by guns were the bows and spears used for hunting land animals. The Eskimo bow was made of wood, antler or baleen, and often had a sinew back to increase elasticity. In spite of this extra feature the bow was effective only at very close range — a serious drawback when hunting animals as fast and perceptive as caribou. One of the most productive methods of hunting caribou was to spear them from kayaks while they swam across lakes and rivers. This method was successful during the late summer when caribou herds migrated south, but could not be used during the cold season when the lakes were frozen.

Eskimo throwing kayak harpoon. The coiled line leads to a sealskin float. Richmond Gulf, 1913-1914
Photo Robert Flaherty



Wooden bow and arrow. The bow is 36" long and has a sinew back designed to increase elasticity. Northern Ungava



Traditional kayak weapons. The harpoon has a removable head to which is fastened a coiled line. The killing lance has a fixed point. Eastern Arctic

Guns were adopted for caribou hunting almost as soon as they were available. Many Eskimos who restricted their caribou hunting to the late summer when armed with bows and spears began to hunt during the winter months when they were supplied with firearms. In Labrador the number of caribou killed during the winter increased dramatically during the last decades of the 18th century, and late winter hunting trips to the interior became a regular feature of the annual cycle. This pattern was repeated over and over as guns were introduced to other areas.

The Eskimos of pre-contact times possessed a variety of devices for catching birds. One of the most widespread was the bird spear which could be hurled with amazing speed from a wooden thrower gripped in the hunter's hand. Birds were also caught with bolas, nets and with baleen snares, which consisted of a number of small nooses attached to a long line. Diving birds were trapped in the nooses when the line was stretched beneath the waters of a shallow lake. All of this equipment was quickly replaced when the Eskimos acquired blunderbusses and shotguns.

Eskimo weapons for hunting sea mammals were not so quick to disappear. The most important implements for hunting seals and walrus during the open water seasons were the kayak harpoon and killing lance. The harpoon was used not merely to kill or wound but to prevent the animal from escaping. It performed this function by means of a removable head which lodged firmly in the victim and was fastened to a long line. The line was either held in the hunter's hand or was attached to a large sealskin float. The lance was strictly a killing weapon and was not used until the prey was already harpooned.

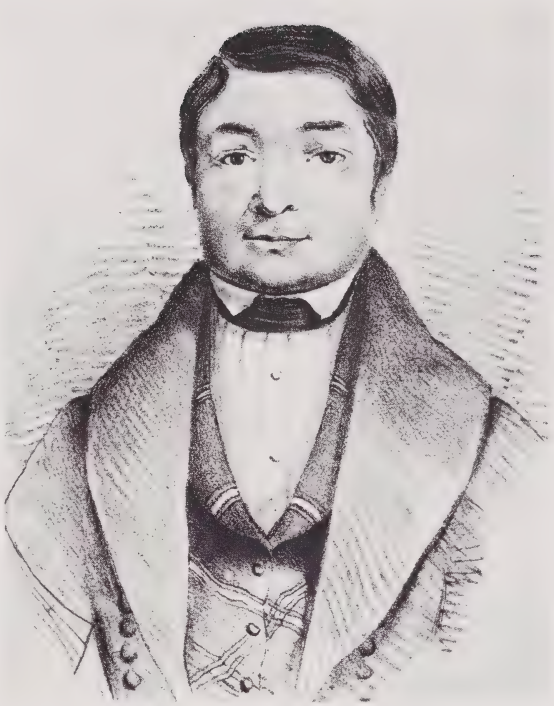
When guns were adopted for sea hunting the killing lance was unnecessary and the harpoon was used merely to retrieve seals which were already shot. This method of hunting was much less hazardous than traditional kayak hunting because the animal was already dead or severely weakened when the hunter came within harpoon range. However, it was more wasteful

Captain George Cartwright, who operated fishing and trapping stations in Southern Labrador from 1770 to 1786. Cartwright allowed the Eskimos to use his guns, thus increasing their desire to possess firearms of their own. Photo from a portrait in his Labrador Journal

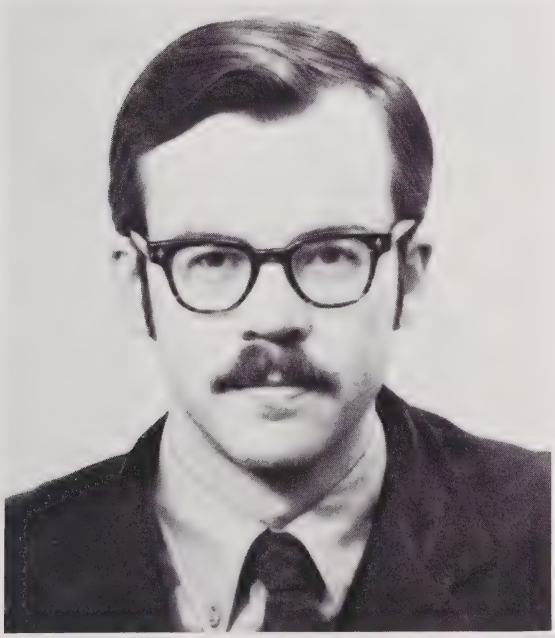
than the old method, since summer seals have little blubber and often sink before they can be harpooned.

Many Eskimos continued to hunt seals and walrus with the harpoon and lance long after they had adopted guns for land game and birds. The inhabitants of southern Labrador did not give up their traditional sea hunting equipment until the second half of the 19th century. By this time they had already possessed guns for over 70 years and had long abandoned the bow and bird spear.

Today the Eskimos have adopted guns for all types of hunting, in the water as well as on land. The traditional harpoons and lances have disappeared, along with all the other devices which for many centuries enabled the Eskimos to survive in the harsh world that is the Arctic.



Eenoolooapik, a young Eskimo from Baffin Island who was taken to Aberdeen on a whaling ship in the winter of 1839. He was given guns and ammunition which he later took back to his native land
Photo from an early lithograph



J. Garth Taylor, Assistant Curator in the ROM Department of Ethnology was born in Cobourg, Ontario and received his Ph.D. from the University of Toronto. Dr. Taylor has made numerous field trips in the eastern Arctic and Subarctic and has studied collections of Eskimo material in the U.S., England, Scotland, Denmark, France and Germany. He has been accompanied on recent field trips by his wife, Helga, who holds a doctorate in ethnology from the University of Vienna.

Fossil pollen and our changing landscape and climate

J. H. McAndrews
Associate Curator
Department of Geology

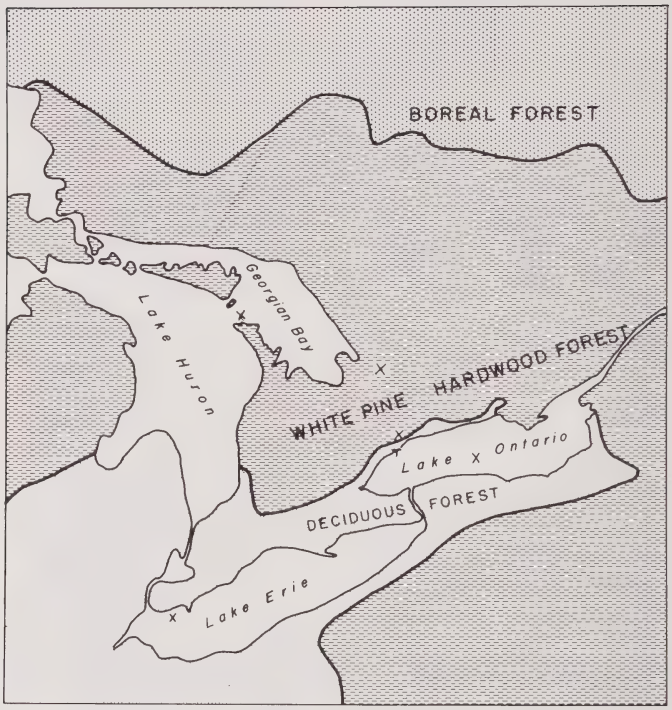
To many people, pollen is a nasty word. It conjures up memories of running eyes, plugged sinuses and prolonged sneezing spells. But to a geologist pollen can provide clues to the history of vegetation and climate in Canada going back thousands, even millions of years.

Until 14,000 years ago, give or take a thousand, all of Canada, except the Yukon, was buried beneath glacial ice. Then the melting of the ice sheet at its southern margin exposed a lifeless soil and a barren landscape. This landscape was soon colonized by the northward migration of plants. The many glacier-formed lakes began to fill with sediment, and this filling continues today. Within the mud is an enormous number of fossil pollen grains. These pollen were windborne from plants growing around the lake, and the kinds of pollen at different levels in the mud provide important clues to plant migrations and forest successions.

Pollen grains are the living, sperm-producing cells of conifers and flowering plants. The waxy walls of the pollen are the most abundant of land-derived fossils. For example, every year in the forests of Ontario from 20,000 to 50,000 pollen are deposited in each square centimetre of soil and water surface. Pollen decay on the soil surface, but those that settle on a lake surface and become part of the lake sediment are preserved indefinitely in this oxygen-poor environment. In fact, fossil pollen are preserved in sedimentary rocks that are millions of years old.

The final withdrawal of glacial ice, 14,000 years ago, sets a geological time limit upon the age of fossil pollen found in the sediment of Ontario lakes..

In southern Ontario the most spectacular and important result of glacial action was the formation of the Great Lakes. About 12,000 years ago the Lake Ontario basin contained Lake Iroquois, a lake with almost the same shape as Lake Ontario but larger in extent and formed as a result of the blockage of the St. Lawrence valley by the glaciers. The



Map of the forest regions of Ontario. The X's locate our lake coring sites. Van Nostrand Lake is just north of Toronto (T)

level of Lake Iroquois stood in the Toronto area about 150 feet above the present lake. The Avenue Road hill, just north of the Royal Ontario Museum, is an indication of its shoreline which can in fact be traced almost completely around the lake.

As the glacial ice melted the water discharged quickly down the St. Lawrence valley, draining Lake Iroquois to a level below the present level of Lake Ontario. A subsequent rise of land at the east end of the Lake Ontario basin caused the waters in the basin to rise and flood westward.

As the glaciers withdrew for the last time they not only formed the Great Lakes but they were also responsible for the numerous small lakes that dot the landscape. Some of these, like van Nostrand Lake, 20 miles north of Toronto, are called kettles. Such lakes, often quite deep, are the results of blocks of ice which were left behind by the glacier and buried in such a way that when they melted a depression was left behind which became filled with water. It is assumed that van Nostrand Lake resulted from a stagnant block of ice left behind during the withdrawal of the ice into the Lake Ontario basin.

Cores of the sediment taken from such lakes as well as from the Great Lakes can be used to interpret the changes in the environmental conditions that have prevailed throughout the time that the lake existed. But more important the sediments contain fossil plant remains and in particular pollen which can be extracted from the sediments and studied in the laboratory. Data gathered from these studies permit the interpretation of the changing flora and changing climate of the area since the withdrawal of the ice.

Our research on the vegetation and climatic history of southern Ontario involves both the Great Lakes and small inland lakes. It is supported by The Quetico Foundation and The Geological Survey of Canada. Samples for pollen analysis are taken from cores of sediment. In the deep water of the Great Lakes we use

oceanographic corers operated from research vessels (page 36). On shallower upland lakes we use corers hand-operated through the ice in winter (page 34).

Pollen grains of Ontario plants are commonly identifiable only to genus, less commonly to species and sometimes only to family. Page 35 shows a few pollen types that are abundant as fossils. Our common conifers, spruce and pine, have air bladders but differ in size and in the density of the network within the bladders. White pine differs from jack pine because it has granules between the bladders. Hemlock is a large spherical grain with a rough surface. Other pollen types have either pores or furrows in their walls. Birch has three pores, and grass has a single pore. Oak and sugar maple have three furrows, and beech has three furrows each with a central pore Ragweed is a small grain with many tiny spines on its surface.

Pollen analysis is usually done on pea-size lumps of mud taken from each 20-centimetre level along the core. Before analysis the pollen is concentrated with chemicals that digest the mineral and organic matrix of the mud but do not attack the pollen. The concentrated pollen is then put under a microscope, and the various types of pollen are identified and counted. Usually counting is carried on until about 300 tree pollen are identified. The tree pollen form the sum on which the percentages of all pollen are calculated. The percentages of each pollen type are graphed according to their depth, and this graph forms a pollen diagram.

Before discussing the pollen diagram some background on the various forest regions of Ontario is appropriate (opposite page).

The natural vegetation of the white pine-hardwoods forest is characterized, in addition to white pine, by hemlock and such deciduous hardwoods as yellow birch, oak, elm, sugar maple, and beech. In the warmer climate of the deciduous forest region of southernmost Ontario, pine, hemlock and yellow birch are infrequent, and the deciduous hardwood trees oak, elm, maple, beech and hickory are dominant. In the cool-climate boreal forest of northern Ontario white pine, hemlock and southern

Aerial photograph of van Nostrand Lake. Photograph by Arthur Williams

hardwoods are absent. The boreal forest is dominated by spruce, but jackpine, balsam fir, white birch, aspen and larch are abundant. Along the northern boundary of the boreal forest scattered spruce grade into tundra along the cold shores of Hudson Bay. Various species of the sedge and grass families characterize the tundra.

In 1968 we cored van Nostrand Lake (page 35) which is located on the Oak Ridges Moraine about 20 miles north of Toronto. It lies just inside the southern boundary of the white pine-hardwoods forest region. We cored 10 metres of sediment in van Nostrand Lake before we struck glacial drift. Overlying the drift was organic silt suggesting a sparsely vegetated upland soil from which the silt was eroded. Most of the core was marl, a lime-rich organic mud formed by algae in the lake. In contrast, most of the upper metre of sediment is clay that was derived from the erosion of upland soils following forest clearance. Forest clearance and farming began around the lake in the early 19th century.

Coring sediment of an Ontario lake through the ice in winter. Photograph by Franklin Wagner

The pollen diagram (page 37) is simplified to show only the 11 main pollen types of the nearly 50 types that were identified during the pollen analysis. The pollen diagram is divided into four pollen zones. The spruce zone was deposited shortly after deglaciation. Abundant spruce pollen indicates that spruce trees were present around the lake. Abundant sedge-family pollen along with a small amount of grass pollen indicate that some tundra occurred in the area, and that spruce trees were probably scattered over the landscape. The closest modern analogue of this zone is the boreal forest-tundra transition of northern Ontario.

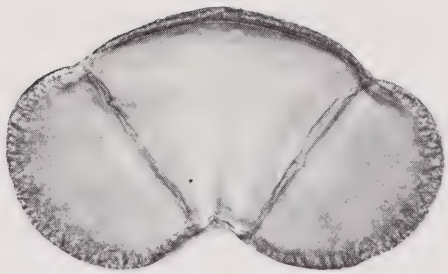
The succeeding jackpine zone has less spruce pollen, much jackpine and birch pollen as well as small amounts of balsam fir, larch and aspen pollen. Herb pollen is insignificant. Needles of jackpine and seeds of white birch were sieved from the sediment of this zone. The jackpine zone represents a period of boreal forest, and radiocarbon dates from cores of other lakes date the boreal forest period between 10,500 and 9,500 years ago.

The succeeding maple zone is characterized by varying pollen percentages of white pine, hemlock and hardwoods typical of the modern vegetation of southern Ontario. White pine and hemlock are prominent at the beginning and end of the zone. Pollen of deciduous trees, including hickory, predominate between four and five metres. The pollen successions in the maple zone indicate a replacement of boreal forest by white pine-hardwoods forest, followed by the successive loss of white pine and hemlock until the forest consisted essentially of the hardwoods that characterize the deciduous forest of extreme southern Ontario. The deciduous forest period occurred around 5,000 years ago and was followed by the southward migration of hemlock and then white pine to the vicinity of the lake. The latest migration of white pine probably dates between 500 to 1,000 years ago.

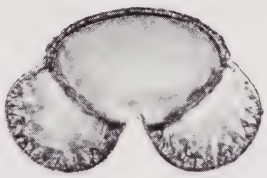
The trends of the pollen curves of the maple zone, and the implied changes in forest composition, suggest that initially a climate like the

one of today changed gradually to a warmer climate similar to that of southernmost Ontario. About 4,000 years ago a cooling trend set in and continued at least to the time of settlement. However, the trends of forest succession and climatic change are obscured by forest clearance represented by the uppermost ragweed zone. In this zone ragweed and grass pollen predominate. These herbaceous plants commonly grow on deforested sites and distributed soils such as fields, roadsides and farm yards. This zone and the clay sediment in the upper metre reflect agricultural settlement.

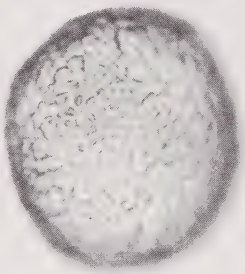
Pollen diagrams from Lake Ontario and Lake Erie have pollen zones similar to those of van Nostrand Lake except that white pine does not increase near the surface. This is to be expected, because these lakes are largely in the deciduous forest. Pollen diagrams from elsewhere in the Great Lakes region sometimes show a different vegetation succession but still



Spruce



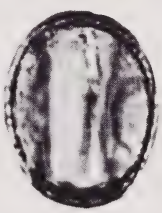
Jackpine



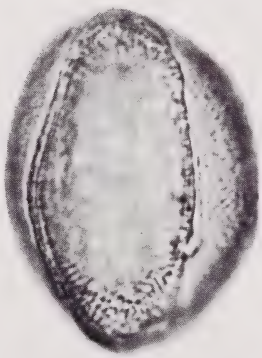
Hemlock

Photomicrographs of pollen grains that are commonly found as fossils in Ontario. Photographs by Geoffry Norris. Spruce, jackpine and hemlock magnified 500 times; other pollen magnified 1,000 times.

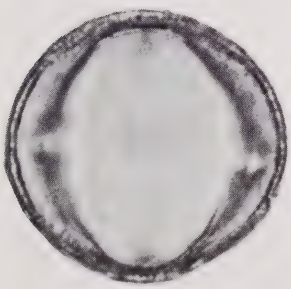
Birch



Oak

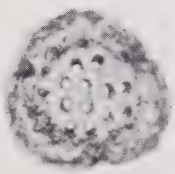


Sugar Maple



Beech

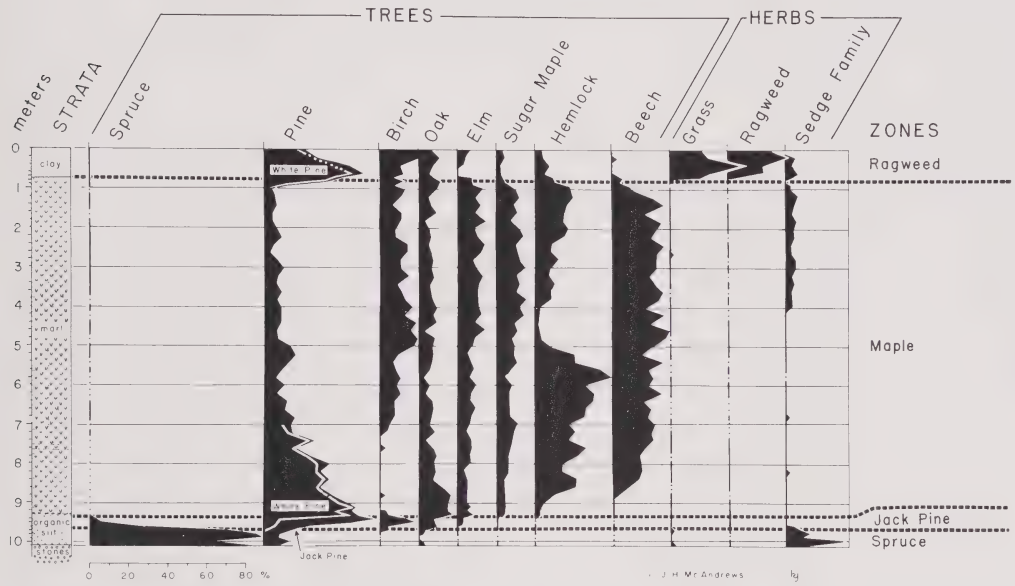
Grass



Ragweed

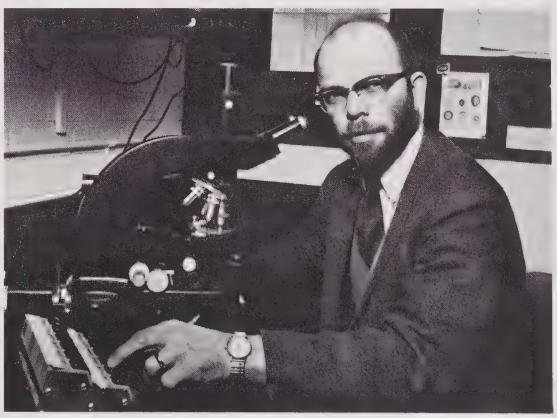
Coring Great Lakes sediment from the research vessel Porte Dauphine of the Great Lakes Institute of the University of Toronto

Pollen diagram of van Nostrand Lake. Only the more abundant pollen types are graphed



indicate the same trends from cold to warm to cool climate. For example, at the western margin of the white pine-hardwoods forest in Minnesota the succession was initially, just as in southern Ontario, from boreal forest-tundra to boreal forest, but this was followed not by white pine-hardwoods forest, but by oak savannah. In Minnesota at 4,000 years ago the cooling trend was reflected by succession of oak savannah to decidous forest and then at 2,000 years ago by the westward expansion of white pine. If our scheme for the latitudinal shifting of vegetation regions is valid, then we would expect the presence of white pine-hardwood forest in the southern part of the boreal forest region about 5,000 years ago. We plan to test this hypothesis soon by doing pollen analyses of sediments from lakes in the boreal forest of central Ontario.

J. H. McAndrews is Associate Curator of Geology and is cross-appointed to the University of Toronto as Associate Professor of Botany. He received his Ph.D. from the University of Minnesota and spent a year at the Institute for Biological Archaeology in the Netherlands before coming to the ROM in 1967. In addition to his studies on the vegetation and climatic history of central North America, Dr. McAndrews has collaborated on the study of climatic changes in Iran, especially those related to the agricultural revolution about 10,000 years ago. Dr. McAndrews is married and has four children: Katherine, Joseph, Peter and Willem.



Jigsaw in jade

D. M. Pendergast
Associate Curator
Office of the Chief Archaeologist

The burial in A-1. The skull lay at the left, beneath a large oyster shell. Arrow indicates location of the mosaic

Over the six years we have spent in excavating the temples at Altun Ha, the discovery of tombs of the priest-rulers of ancient Maya society has become a pleasant and in some ways almost predictable part of work. In contrast, burials of people of lesser status are far from common. Our investigations have revealed only four such burials from the entire Classic period (A.D. 250-900). Two of the four come from Structure A-1, the Temple of the Green Tomb.

Simple burials are often found near the centre line of the building, and may represent sacrifice akin to offerings of jade, pearls, and other objects which were buried in buildings as appeasement for the gods. The near-absence of grave goods with one of the burials in A-1 may support such an identification, although the Classic period Maya were not given to human sacrifice.

The second burial from this temple, a young boy accompanied by a curious welter of unusual artifacts, is almost surely not a sacrificial victim, but instead perhaps the son of a person of high rank or a neophyte in the priesthood.

The burial was discovered during excavations around and beneath the Green Tomb. When the east crypt wall was removed, we encountered a mass of small pottery vessels and bone needles, behind which stood a large bone figurine, a great rarity in the humid tropical lowlands. Further search revealed a badly-decayed burial laid on its back, with pottery animal heads and vessels, a necklace of 2801 shell and jade beads, plus several shells and odd-coloured rocks lying around it

The reconstructed mosaic.

Just north of the right knee were two small bone figurines and several other artifacts, overlying a number of small pieces of jadeite.

When the upper objects had been drawn, photographed, and removed, we found that the jadeite pieces were parts of a mosaic object, all lying with their polished sides down. The backing of the mosaic must have been of wood or other perishable material, for not a trace of it remained. All we could do at the time was record the position of each piece, and note that four eye-shaped objects with black pupils suggested that the mosaic might have represented a human face.

All this took place in 1966, at the beginning of a "dry" season marked by almost incessant rains. At the season's end, the objects from the burial were brought to Toronto for treatment and study. As I was not then at the ROM during the fall months, the mosaic was set aside until I might be present to supervise attempts at its reconstruction. Thus matters sat until late in 1969, when completion of the staggering task of rebuilding hundreds of pottery vessels enabled us to turn to other kinds of conservation work.

With my blessing, but with no great encouragement regarding the chances of reconstructing even the general form of the mosaic, my wife Esther, who works as a volunteer technician in our laboratory, set out to arrange the pieces as they were found, and to search for some meaningful pattern in the arrangement. After nearly a day of pondering, she hit on the answer. The key to the whole pattern was a piece unlike all the others in shape and thickness. It was surely the nose of a human face. With this as the starting point, we gradually fitted the cheeks, a chin, the eyes, and miscellaneous pieces together. Each piece was checked against a copy of the field drawing reversed to show the polished sides facing upward. The pieces were gradually laid out in a small sand-filled tray to form a somewhat distorted version of the original object. Although positions of some elements were open to question because of displacement as the backing rotted, we finally achieved a reasonably certain reconstruction by comparison with generally similar mosaics from the great Maya centre of Tikal in Guatemala. In a little over a day's time, the object had grown from a box of meaningless pieces to a semblance of its original form, but the task of reconstruction had really only begun.

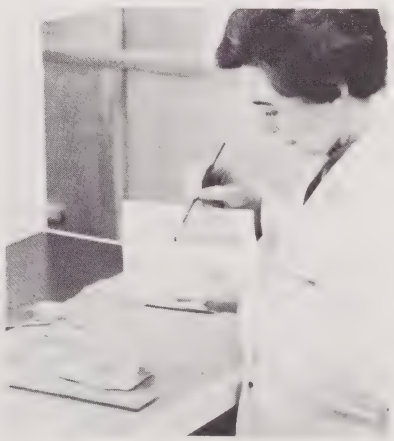
Now we faced the problem of creating a new backing. As the first step, my wife built up a plasticine base in which she embedded the pieces of jadeite, shaping the material to fit as the face slowly took form. She then consulted Jim Chalmers of the Conservation Department on the best method of producing a new backing. We had considered everything, even the carving of a new wooden back. Jim's suggestion proved far simpler. After removing the jadeite pieces from their plasticine backing, we could build up layers of latex over the plasticine to produce a

Structure A-1, seen from the southeast. The burial lay beneath the floor at the base of the stairway visible in the upper part of the building

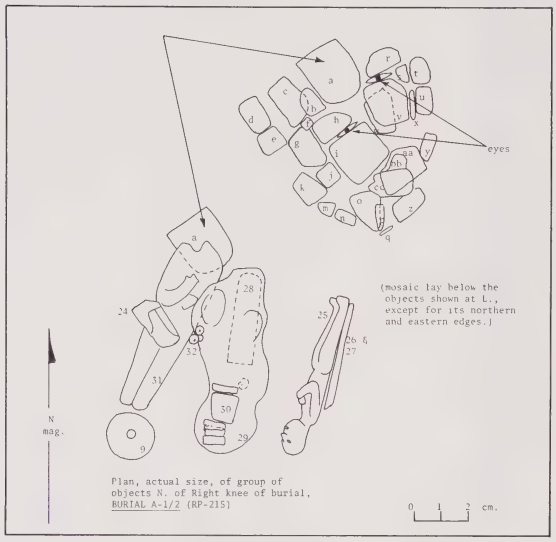
The completed plasticine back, ready to be covered with latex to form the mould

Below left: Latex being applied to the plasticine back; the first of six coats.

The completed latex mould after removal of the plasticine back and addition of a plaster support, being cleaned prior to pouring the plaster back



Field drawing of the mosaic and associated objects. Compare positions of pieces in this drawing with the reconstructed mosaic


eyes
(mosaic lay below the objects shown at L., except for its northern and eastern edges.)
N
mag.
Plan, actual size, of group of objects N. of Right knee of burial, BURIAL A-1/2 (RP-215)
0 1 2 cm.

cast plaster backing for the mosaic. It took six days to form the latex mould over the plasticine, which had been set on a sheet of glass to make it easier to handle. When the latex had reached sufficient thickness, it was capped with a thick coating of plaster.

Two days later the plaster was separated from the plasticine model. A little cleaning and trimming prepared the mould for pouring of a new plaster backing for the mosaic, ready to be treated and used just two days later.

Some shaping and filing was necessary to offset the slight shrinkage which always occurs in a latex mould. Excess plaster was then carved from the sides, and the backing was impregnated with polyvinyl acetate to give it added strength. Two more carving sessions, each followed by reimpregnation of any newly-exposed surfaces, and the backing was ready for the insertion of the pieces of jadeite. Nearly a week was spent in trying a variety of colours to give the backing an appearance approximating the original, but nothing allowed the jade to stand out, and ultimately we left the plaster white.

After almost a month, the completed mosaic emerged as a striking small human face with ear ornaments and a headdress with two eyes near its base, perhaps indicating that it is some sort of animal head or mask.

In many respects, our mosaic head resembles specimens from Tikal, and it is this resemblance that makes the mosaic more than just something of aesthetic interest. In addition to suggesting ties between Altun Ha and Tikal, the known date of the Tikal mosaics allows us to suggest that our object is of Early Classic (*c.* A.D. 400-600) manufacture. This fits very nicely with the guess-date of A.D. 500-550 which I had given to the part of the construction sequence of A-1 in which the burial lay. Weeks of painstaking work on bits and pieces have given us not only a beautiful example of Early Classic Maya art, but also an important element in the interpretation of Maya prehistory at Altun Ha.

David M. Pendergast, whose wife Esther reassembled the *Jigsaw in Jade*, is Associate Curator, Office of the Chief Archaeologist, ROM. Since 1964, he has been Field Director of the ROM's Altun Ha Expedition in British Honduras. Mrs. Pendergast accompanies him in the field, assisting with colour nomenclature of sherds, and incidentally collecting data for the Department of Ornithology, ROM.

The Growing Collections

A beautiful terracotta head of a girl was acquired by the Greek and Roman Department through the generosity of the late Martin Wills, vice-chairman of the Museum Board of Trustees, whose untimely death has deprived the Museum of one of its great friends and benefactors. Almost life size, the head is simply but effectively decorated with black and red paint. It comes from Italy, and its archaic style dates it to about 500 B.C.; it is one of these products of Etruscan art in which Greek, more specifically Ionic, influences are so strong as to make it impossible to say whether the object was made by a talented Etruscan native artist, or by a Greek artist working in Italy. In any case, the fine quality of the workmanship, and above all the spirited expression of the head with its "archaic smile," its elaborate coiffure, its rosette earrings, and a general air of sophistication, make our little *kore* a charming new cousin, if not sister, of the contemporary marble *korai* from the Athenian Acropolis.

A star sapphire of rare size and beauty, an amethyst and a topaz have been added to the Gem Collection. The medium blue, slightly oval star sapphire, the generous gift of Mrs. Edgar J. Stone, originated in Ceylon, and weights 174.75 carats. The cushion-shaped parti-coloured amethyst-citrine, an unusual colour combination, originated in Brazil. Its weight is 123.51 carats. The topaz is the gift of Mr. G. G. Waite, Research Associate in the ROM; it is pale blue octagonal mixed-cut, weighing 117.65 carats. The original material came from Texas and was cut by Mr. Waite.

Specimens of six mineral species, not previously represented in the ROM Mineralogy collections, have been acquired: scholtzite, ramsdellite, rhodesite, magadiite, aurorite and carbonate-cyanotrichite.

In addition to the usual acquisition of specimens (195 during the period November 1969-January 1970), the Department was fortunate to be able to acquire through exchange a labelled and catalogued collection of approximately 4,000 micromounts. Micromounts are tiny specimens of minerals, mounted for study and display purposes, which permit an extensive collection in a very small space. Shown is a boxed micromount of Native Silver, Creede Co., Colorado, U.S.A.; this most attractive specimen is about ⅜″ long and is housed in a box ⅞″ square. We are grateful to Mr. George Huff of the Canadian Micromounters Association for bringing this collection to our attention, and to Mr. David Jensen of Ward's Natural Science Establishment for his co-operation. This micromount collection will form the foundation of a continually growing set of micromounts for study purposes.

Through a bequest by the late Charles S. Band the Greek and Roman Department has gratefully received a group of elegant Roman bronzes consisting of a wine jug, the pitcher shown here, a lamp and a candelabrum with an extendible shaft, all of them dating from the 1st-2nd century A.D. A pricket candlestick of the 5th-6th century A.D. completes the group. The objects, acquired in Jerusalem by the late Mr. Band in the 1920s, are a most welcome addition.

Five recent acquisitions of the West Asian Department are shown, clockwise from the left. A bronze bucket with three drop-shaped feet has an incised frieze with a Kufic inscription, expressing good wishes. The bronze feline fore-quarters with incised design were once joined to a larger object, probably a tripod. The graceful pear-shaped vessel is an oil lamp. The incense burner from East Persia (12th-13th century) is topped by a bird, and two silhouette bird's heads project from either side of the finial. In the foreground is a brass candlestick, inlaid with silver, gold, and black composition. The inscription around the body contains the titles of an amir of the Mamluk Malik Nasir (1293-1340): "al-Muqarr al-ᶜAli al-Mawlawi al-Maliki al-Bahri al-ᶜAlimi al-ᶜAdili al-Maliki al-Nasiri." The candlestick is from late 13th- early 14th century Syria or Egypt. The West Asian Department has also acquired three miniatures—two of them illustrating adventures of Rustam, the Persian hero made familiar to us by Matthew Arnold's "Sohrab and Rustam." The miniature shown here depicts Rustam's struggle with the White Demon in the demon's cave. Rustam's horse Rakhsh, behind the rocks forming the cave, and the demon's captive, Kai Kaus, the Shah of Iran, await the outcome. Rustam has already severed one of the demon's legs.

Recent Publications

Chintz, today a rather inexpensive printed and glazed cotton, seems an unlikely object of black-market machinations. But in 17th and 18th century Europe, exotic chintz from India was often more sought after than silks and satins. Fashionable society was mad for its elaborate patterns, meticulously hand-painted and hand-dyed in vivid colours. Best of all, the Indian secret of fast dyeing made the material washable. The craze for chintz seemed to jeopardize the livelihood of European weavers; in England alone, linen and woollen weavers succeeded in banning both imported and locally-woven chintz for over 70 years (1700-1774). Predictably, the restrictions served only to heighten black-market trading in chintz.

Origins of Chintz, a joint production of the ROM and the Victoria and Albert Museum in London, is the most complete study of Indian chintz yet available. It has 16 magnificent colour plates and over 150 black-and-white photographs of the chintzes in the collections of these two Museums. Prepared by John Irwin, Keeper of the Indian Section of the Victoria and Albert Museum, and Katharine B. Brett, Associate Curator in the ROM Textiles Department, the publication was assisted by a grant from the Canada Council. (*Origins of Chintz,* Her Majesty's Stationery Office, hard cover, $18.00)

The first of six handbooks on the Indians of Canada by E. S. Rogers, Curator of the ROM Ethnology Department, *Indians of the North Pacific Coast* is a 24-page overview of the life of the Pacific Coast Indian tribes, with maps, photographs and drawings. It is to be followed, before summer, by *Indians of the Plains, Indians of the Subarctic, Algonkians of the Eastern Woodlands, Iroquoians of the Eastern Woodlands*, and an introductory survey of the five areas. Each handbook in the series stands on its own as a brief introduction to historic Canadian Indian groups; each will provide a handbook to the relevant displays in the ROM Ethnology Galleries. Used in conjunction with an outstanding set of filmstrips obtainable from the National Film Board of Canada, and with the increasingly popular ROM Charts, the series promises to be an excellent teaching aid in classroom situations (*Indians of the North Pacific Coast,* ROM, paperbound, 50¢)

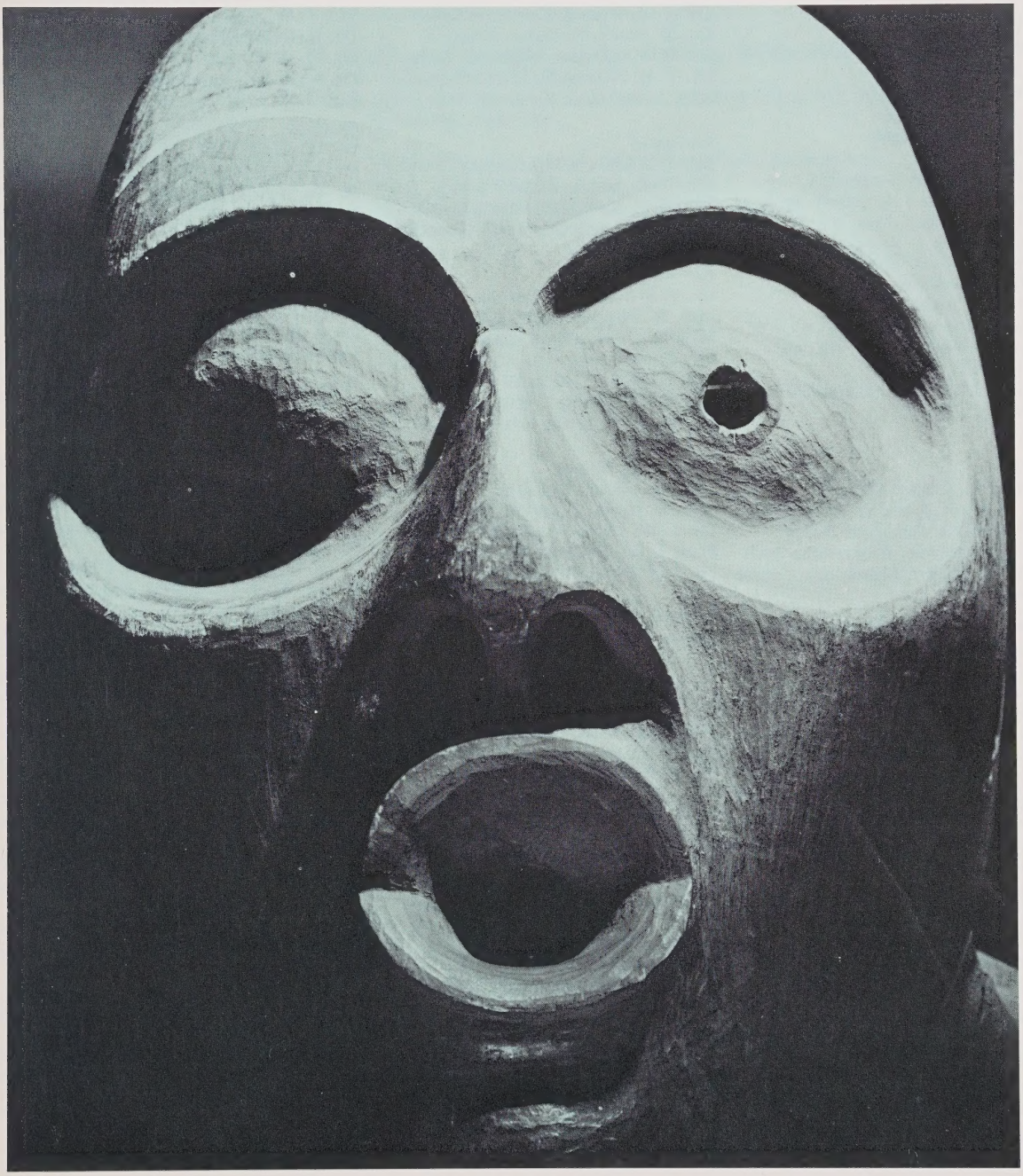
ASSINIBOINE, the fourth in a series of six ROM Charts illustrates the intricate patterns of geometric figures decorating clothing and artifacts of the Assiniboine group of Plains Indians. First done in porcupine quill work and paint, the designs were later worked in brilliant beads obtained through trade with Europeans. The ROM Chart is accompanied by a sheet of background information by E. S. Rogers, Curator, ROM Ethnology Department. (ROM Chart ASSINIBOINE, 32″ x 39″, folded in mailing envelope 9″ x 12″, $3.00)

In the most recent Life Sciences Occasional Paper, Dr. J. B. Waterhouse, Research Associate in the ROM Department of Invertebrate Palaeontology and Associate Professor, Geology Department, University of Toronto, re-examines the fossil shell, *Fusella* M'Coy 1844. (*The Lower Carboniferous Brachiopod Genus Fusella M'Coy 1844*, ROM Life Sciences Occasional Paper 15, 75¢)

Consider the armoured car, or the automatic rifle — practical and efficient, no doubt, but hardly works of art. Yet for centuries protective armour and offensive weapons were also beautiful to see. *The Armour Court of the Royal Ontario Museum*, by Jean Bacso, Assistant Curator in the European Department of the ROM, discusses both the efficiency and the beauty of European, Indo-Persian, Turkish and Japanese arms and armour since the 16th century. Gunpowder and the firearm sounded the death-knell of body armour, but until the pre-

sent century snaphaunces, matchlocks, duelling pistols and even cannons were embellished with handsome carving and rich inlays. (*The Armour Court of the Royal Ontario Museum,* ROM, paperbound, 75¢).

A catalogue of Royal Ontario Museum publications in print is now available from the ROM Sales Desk, or Charles J. Musson Limited, Ajax, Ontario. It lists publications of the Royal Ontario Museum as well as other titles related to the Museum. It will be periodically revised and updated. (*Publications in Print,* catalogue, ROM)



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